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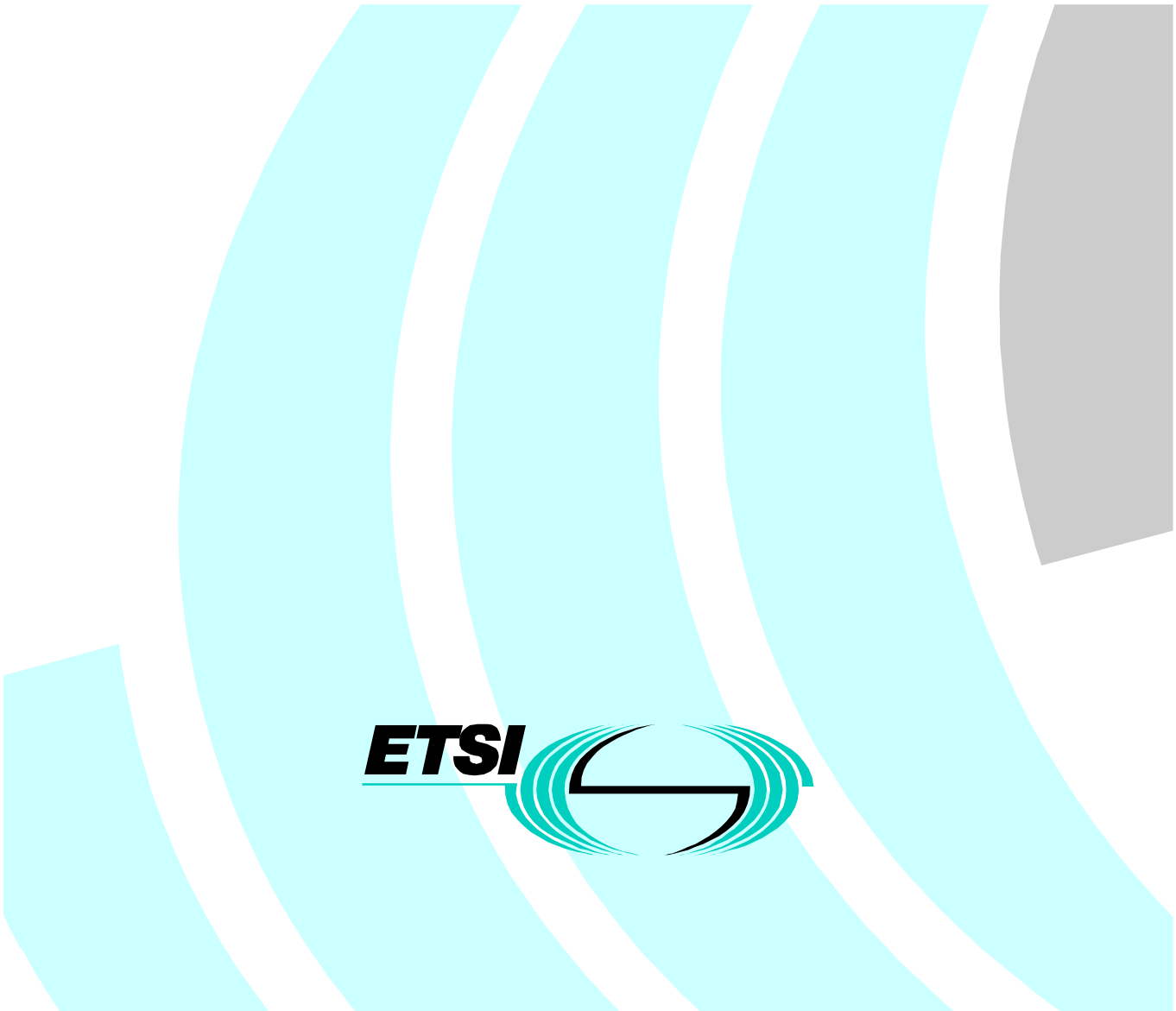
Technical Specification

GEO-Mobile Radio Interface Specifications;
Part 2: Service specifications;
Sub-part 9: Bearer Services (BS) supported by a GMR-2
Public Satellite Mobile Network (PSMN);
GMR-2 02.002



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Contents

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IPRs:

Project	Company	Title	Country of Origin	Patent n°	Countries Applicable
TS 101 377 V1.1.1	Digital Voice Systems Inc		US	US 5,715,365	US
TS 101 377 V1.1.1	Digital Voice Systems Inc		US	US 5,754,974	US
TS 101 377 V1.1.1	Digital Voice Systems Inc		US	US 5,226,084	US
TS 101 377 V1.1.1	Digital Voice Systems Inc		US	US 5,701,390	US
TS 101 377 V1.1.1	Digital Voice Systems Inc		US	US 5,826,222	US

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Project	Company	Title	Country of Origin	Patent n°	Countries Applicable
TS 101 377 V1.1.1	Ericsson Mobile Communication	Improvements in, or in relation to, equalisers	GB	GB 2 215 567	GB
TS 101 377 V1.1.1	Ericsson Mobile Communication	Power Booster	GB	GB 2 251 768	GB
TS 101 377 V1.1.1	Ericsson Mobile Communication	Receiver Gain	GB	GB 2 233 846	GB
TS 101 377 V1.1.1	Ericsson Mobile Communication	Transmitter Power Control for Radio Telephone System	GB	GB 2 233 517	GB

IPR Owner: Ericsson Mobile Communications (UK) Limited
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Project	Company	Title	Country of Origin	Patent n°	Countries Applicable
TS 101 377 V1.1.1	Hughes Network Systems		US	Pending	US

IPR Owner: Hughes Network Systems
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Project	Company	Title	Country of Origin	Patent n°	Countries Applicable
TS 101 377 V1.1.1	Lockheed Martin Global Telecommunic. Inc	2.4-to-3 KBPS Rate Adaptation Apparatus for Use in Narrowband Data and Facsimile Communication Systems	US	US 6,108,348	US
TS 101 377 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Cellular Spacecraft TDMA Communications System with Call Interrupt Coding System for Maximizing Traffic ThroughputCellular Spacecraft TDMA Communications System with Call Interrupt Coding System for Maximizing Traffic Throughput	US	US 5,717,686	US
TS 101 377 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Enhanced Access Burst for Random Access Channels in TDMA Mobile Satellite System	US	US 5,875,182	
TS 101 377 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Spacecraft Cellular Communication System	US	US 5,974,314	US
TS 101 377 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Spacecraft Cellular Communication System	US	US 5,974,315	US
TS 101 377 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Spacecraft Cellular Communication System with Mutual Offset High-argin Forward Control Signals	US	US 6,072,985	US
TS 101 377 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Spacecraft Cellular Communication System with Spot Beam Pairing for Reduced Updates	US	US 6,118,998	US

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Satellite Earth Stations and Systems (SES).

The present document is part 2, sub-part 9 of a multi-part deliverable covering Geo-Mobile Radio Interface Specification, as identified below:

Part 1: "General specifications";

Part 2: "Service specifications":

Sub-part 1: "Teleservices supported by a GMR-2 Public Satellite Mobile Network (PSMN); GMR-2 02.003";

Sub-part 2: "General on Supplementary Services; GMR-2 02.004";

Sub-part 3: "Security Aspects; GMR-2 02.009";

Sub-part 4: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 1; GMR-2 02.083";

Sub-part 5: "Multiparty (MPTY) Supplementary Services; GMR-2 02.084";

Sub-part 6: "Service Accessibility; GMR-2 02.001";

Sub-part 7: "Operator Determined Barring (ODB); GMR-2 02.041";

Sub-part 8: "Call Barring Supplementary Services; GMR-2 02.088";

Sub-part 9: "Bearer Services (BS) supported by a GMR-2 Public Satellite Mobile Network (PSMN); GMR-2 02.002".

Part 3: "Network specifications";

Part 4: "Radio interface protocol specifications";

Part 5: "Radio interface physical layer specifications";

Part 6: "Speech coding specifications".

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Version 1.m.n

where:

- the third digit (n) is incremented when editorial only changes have been incorporated in the specification;
- the second digit (m) is incremented for all other types of changes, i.e. technical enhancements, corrections, updates, etc.

Introduction

GMR stands for GEO (Geostationary Earth Orbit) Mobile Radio interface, which is used for mobile satellite services (MSS) utilizing geostationary satellite(s). GMR is derived from the terrestrial digital cellular standard GSM and supports access to GSM core networks.

Due to the differences between terrestrial and satellite channels, some modifications to the GSM standard are necessary. Some GSM specifications are directly applicable, whereas others are applicable with modifications. Similarly, some GSM specifications do not apply, while some GMR specifications have no corresponding GSM specification.

Since GMR is derived from GSM, the organization of the GMR specifications closely follows that of GSM. The GMR numbers have been designed to correspond to the GSM numbering system. All GMR specifications are allocated a unique GMR number as follows:

GMR-n xx.zyy

where :

- xx.0yy (z = 0) is used for GMR specifications that have a corresponding GSM specification. In this case, the numbers xx and yy correspond to the GSM numbering scheme.
- xx.2yy (z = 2) is used for GMR specifications that do not correspond to a GSM specification. In this case, only the number xx corresponds to the GSM numbering scheme and the number yy is allocated by GMR.
- n denotes the first (n = 1) or second (n = 2) family of GMR specifications.

A GMR system is defined by the combination of a family of GMR specifications and GSM specifications as follows:

- If a GMR specification exists it takes precedence over the corresponding GSM specification (if any). This precedence rule applies to any references in the corresponding GSM specifications.

NOTE: Any references to GSM specifications within the GMR specifications are not subject to this precedence rule. For example, a GMR specification may contain specific references to the corresponding GSM specification.

- If a GMR specification does not exist, the corresponding GSM specification may or may not apply. The applicability of the GSM specifications is defined in GMR-n 01.201.

1 Scope

The present document defines a set of bearer services to be provided to GMR-2 PSMN subscribers by a GMR-2 PSMN itself and in connection with other networks. The present document should also be used as a reference for defining the corresponding required mobile network capabilities which are specified by means of the "GMR-2 PSMN connection type" concept, defined in GSM 03.10 [4].

Bearer services not included in the present document that require modifications to the GMR-2 signalling specifications should not be introduced unilaterally by a mobile network operator.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] GMR-2 01.004 (ETSI TS 101 377-1-1): "GEO-Mobile Radio Interface Specifications; Part 1: General specifications; Sub-part 1: Abbreviations and acronyms; GMR-2 01.004".

[2] GMR-2 02.003 (ETSI TS 101 377-2-1): " GEO-Mobile Radio Interface Specifications ; Part 2: Services specifications; Sub-part 1: Teleservices supported by a GMR-2 Public Satellite Mobile Network (PSMN); GMR-2 02.003".

[3] GMR-2 02.004 (ETSI TS 101 377-2-2): "GEO-Mobile Radio Interface Specifications; Part 2: Services specifications; Sub-part 2: General on supplementary services; GMR-2 02.004".

[4] GSM 03.10 (ETSI ETS 300 528): "European digital cellular telecommunication system (Phase 2); GSM Public Land Mobile Network (PLMN) connection types (GSM 03.10 version 4.3.1)."

[5] GSM 04.02 (ETSI ETS 300 551): "European digital cellular telecommunication system (Phase 2); GSM Public Land Mobile Network (PLMN) access reference configuration (GSM 04.02 version 4.04)".

[6] GSM 09.05 (ETSI ETS 300 602): "European digital cellular telecommunication system (Phase 2); Interworking between the Public Land Mobile Network (PLMN) and the Packet Switched Public Data Network (PSPDN) for Packet Assembly/Disassembly facility (PAD) facility access (GSM 09.05 version 4.4.2)".

3 Abbreviations

For the purposes of the present document, the abbreviations given in GMR-2 01.004 [1] apply.

4 Framework for defining bearer services

Bearer services are described by attributes, which are intended to be independent. These attributes are described and defined in GMR-2 02.003 [2]. They are grouped into four categories:

1) information transfer attributes, which characterize the network capabilities for transferring information from a user access point in a GMR-2 PSMN to a user access point in another network (refer to GMR-2 02.003 [2] and GSM 04.02 [5] for definitions of user access points, originating and terminating networks);

2) access attributes, which describe the means for accessing network functions or facilities as seen at the access point in the PSMN (see GMR-2 02.003 [2]);

3) interworking attributes, which describe properties of the terminating network and its access point. The terminating network may include another GSM PLMN, GMR-2 PSMN or the originating PSMN (see GMR-2 02.003 [2]);

4) general attributes, which deal with the service in general.

Figure 1 shows the relation between the groups of attributes and their fields of applicability.

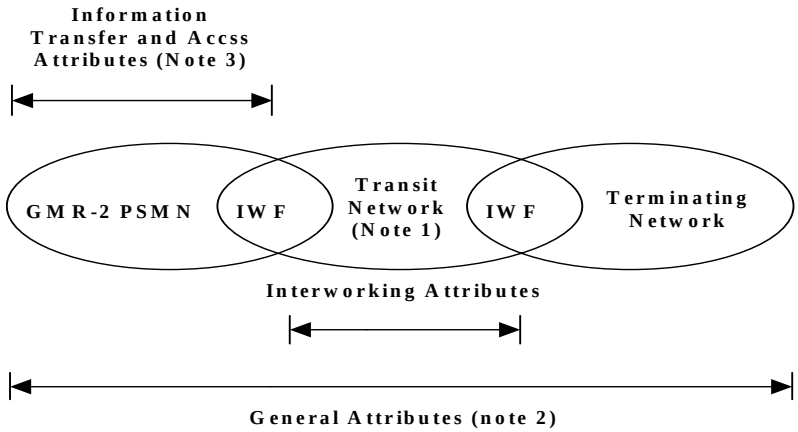

Figure 1: GMR-2 02.002: Relation between the groups of attributes and fields of applicability

NOTE 1: A transit network may not exist for a bearer service.

NOTE 2: Communication may be established from either end.

NOTE 3: The information transfer and access attributes of a bearer service relate to a direct peer-to-peer communication of:

- TE to TE;
- TE to a network gateway (supporting, for example, PSTN interworking); or
- network gateway to a TE.

The following table lists the individual attributes in each of the four groups. The GMR-2 bearer service definitions in the present document are based on the "Minimal Set" of attributes.

Table 1: GMR-2 02.002: List of bearer service attributes

Bearer service attributes	Minimal Set
Information Transfer Attributes	
Information Transfer Mode	X
Information Transfer Rate	X
Information Transfer Capability	X
Establishment of Communication	X
Symmetry	X
Communication Configuration	X
Access Attributes	
Access Channel and Rate	
Signalling Access Protocols	
Information Access Protocols	
Information Access Structure	X
Information Access Rate	X
Interworking Attributes	
General Attributes	
Supplementary Services Provided	
Quality of Service	X
Operational and Commercial	

Attributes that are not part of the minimal set provide further technical detail and are required to fully define the use of each bearer service.

See the GSM 07-series specifications for information about the Signalling Access Protocols, Information Access Protocols and related access attributes.

GMR-2 supplementary services are defined in GMR-2 02.004 [3].

Intercommunication is required with services in the PSTN, ISDN, CSPDN and other PSMNs and PLMNs. The capabilities that describe the Interworking Attributes are described in GSM 03.10 [4] and the GSM 09-series specifications.

5 Bearer service categories

All bearer service categories provide information transfer between R/S reference points and allow the use of sub-rate information streams which are rate-adapted.

The bearer services can be grouped into the following categories:

- Unrestricted Digital Information (UDI);

  Provides the transfer of unrestricted digital information;

- 3,1 kHz (External to the PSMN);

Used to select a "3,1 kHz audio" interworking function at the MSC. This service category is used when interworking with the ISDN or PSTN "3,1 kHz audio" service and includes the capability to select a modem at the interworking function. "External to the PSMN" indicates that the "3,1 kHz audio" service is only used outside of the PSMN, in the ISDN/PSTN. The connection within the PSMN, user access point to the interworking function, is an unrestricted digital connection:

- PAD.

Provides an asynchronous connection to a PAD. This enables PSMN subscribers to access a packet network (PSPDN/ISDN). See GSM TS 09.05 [6] for service and interworking specifications.

6 Bearer services

This clause provides a list of the existing GMR-2 bearer services and indicates the values for each attribute in the minimal set. The GMR-2 bearer service numbers correspond to the GSM specified bearer service numbers.

The following attributes have the same value for all GMR-2 bearer services. Their values are as follows:

Information Transfer Mode:	"Circuit"
Information Transfer Rate:	Not applicable (see note)
Establishment of Communication:	"Demand"
Symmetry:	"Bi-directional Symmetric"
Communication Configuration:	"Point to point"

NOTE: The Information Transfer Rate attribute is not applicable because it depends on the reference point assumed in the GMR-2 PSMN, transit or terminating network.

Table 2 contains the list of the bearer services and the values for the remaining attributes in the minimal set.

Table 2: GMR-2 02.002

BEARER SERVICE NUMBER	BEARER SERVICE NAME	ACCESS STRUCTURE	ACCESS RATE	INFORMATION TRANSFER	QOS ATTRIBUTE CAPABILITY	NOTES
24	Asynchronous 2,4 kbps	Asynch	2,4 kbps	UDI or 3,1kHz	T	
25	Asynchronous 4,8 kbps	Asynch	4,8 kbps	UDI or 3,1kHz	T	
26	Asynchronous 9,6 kbps	Asynch	9,6 kbps	UDI or 3,1kHz	T	
32	Synchronous 2,4 kbps	Synch	2,4 kbps	UDI or 3,1kHz	T	
33	Synchronous 4,8 kbps	Synch	4,8 kbps	UDI or 3,1kHz	T	
34	Synchronous 9,6 kbps	Synch	9,6 kbps	UDI or 3,1kHz	T	
44	PAD Access 2,4 kbps	Asynch	2,4 kbps	UDI	T	See note 1 See note 2
45	PAD Access 4,8 kbps	Asynch	4,8 kbps	UDI	T	See note 1 See note 2
46	PAD Access 9,6 kbps	Asynch	9,6 kbps	UDI	T	See note 1 See note 2
NOTE 1: Although the general information transfer capability is UDI, the information transfer capability on the network-specific interface between the IWF and the PAD may be UDI or 3,1 kHz and is the choice of the network operator.						
NOTE 2: This bearer service is applicable to Mobile Originated (MO) calls only.						

History

Document history		
V1.1.1	March 2001	Publication